

SEQUENCE LISTING

<110> MIYAWAKI, ATSUSHI
TSUTSUI, HIDEKAZU
KARASAWA, SATOSHI

<120> FLUORESCENT PROTEIN

<130> P28994

<140> 10/561,040

<141> 2005-12-16

<150> PCT/JP04/08790

<151> 2004-06-16

<150> JP 2003-170330

<151> 2003-06-16

<160> 23

<170> PatentIn Ver. 3.3

<210> 1

<211> 227

<212> PRT

<213> Favia favaus

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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Leu Met Glu Gly
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Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
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Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly
50 55 60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
130 135 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145 150 155 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
180 185 190

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
195 200 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
210 215 220

Leu Ala Lys
225

<210> 2
<211> 684
<212> DNA
<213> Favia favirus

<220>
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<222> (1)..(681)

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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Leu Met Glu Gly
1 5 10 15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
20 25 30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga 144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
35 40 45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc gat tac ggc 192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly
50 55 60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110

ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt 384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca 432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
130 135 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt 480

Ser	Thr	Glu	Lys	Met	Tyr	Val	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp	Val	
145					150					155					160	
aac	atg	gct	ctg	ttg	ctt	caa	gga	ggt	ggc	cat	tac	cga	tgt	gac	ttc	528
Asn	Met	Ala	Leu	Leu	Leu	Gln	Gly	Gly	Gly	His	Tyr	Arg	Cys	Asp	Phe	
				165					170					175		
aga	act	act	tac	aaa	gca	aag	aag	ggt	gtc	cag	ttg	cca	gac	tat	cac	576
Arg	Thr	Thr	Tyr	Lys	Ala	Lys	Lys	Val	Val	Gln	Leu	Pro	Asp	Tyr	His	
			180					185					190			
ttc	gtg	gat	cat	cga	att	gag	ata	aca	agc	cat	gac	aag	gat	tac	aac	624
Phe	Val	Asp	His	Arg	Ile	Glu	Ile	Thr	Ser	His	Asp	Lys	Asp	Tyr	Asn	
		195				200						205				
aag	gtt	aag	ctg	tat	gag	cat	gct	aaa	gct	cat	tcc	ggg	ctg	cca	agg	672
Lys	Val	Lys	Leu	Tyr	Glu	His	Ala	Lys	Ala	His	Ser	Gly	Leu	Pro	Arg	
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ctg	gcc	aag	taa													684
Leu	Ala	Lys														
225																

<210> 3
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<220>
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 <222> (3)
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<220>
 <221> modified_base
 <222> (9)
 <223> Inosine

<220>
 <221> modified_base
 <222> (21)
 <223> a, c, g, t, unknown or other

<400> 3
 ggnwsbgtna ayggvcayda ntt 23

<210> 4
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 <212> DNA
 <213> Artificial Sequence

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 <223> Description of Artificial Sequence: Synthetic primer

<400> 4
aactggaaga attcgcggcc gcaggaa

27

<210> 5
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<220>
<221> modified_base
<222> (11)
<223> Inosine

<220>
<221> modified_base
<222> (14)
<223> Inosine

<220>
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<222> (20)
<223> Inosine

<400> 5
tgccwtttgc nttngayatn ttg

23

<210> 6
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

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<223> Inosine

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<221> modified_base
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<223> Inosine

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<223> Inosine

<220>
<221> modified_base
<222> (21)
<223> Inosine

<400> 6
gtcntcttyt gcacnacngg nccatydgva ggaaa 35

<210> 7
<211> 36
<212> DNA
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<220>
<223> Description of Artificial Sequence: Synthetic
primer

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<222> (24)..(25)
<223> Inosine

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<221> modified base
<222> (29)..(30)
<223> Inosine

<220>
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<400> 7
ggccacgcgt cgactagtac gggnnngggnn gggnnng 36

<210> 8
<211> 30
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
primer

<400> 8
ttgtcaagat atcgaaagcg aacggcagag 30

<210> 9
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

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<211> 30
<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic primer

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<210> 11

<211> 44

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic primer

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cccggatccg atgagtgtga ttacawcaga aatgaagatg gagc

44

<210> 12

<211> 227

<212> PRT

<213> Favia favaus

<400> 12

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
1 5 10 15

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
20 25 30

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly
50 55 60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
130 135 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145 150 155 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
180 185 190

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
195 200 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
210 215 220

Leu Ala Lys
225

<210> 13
<211> 684
<212> DNA
<213> Favia favius

<220>
<221> CDS
<222> (1)..(681)

<400> 13

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gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag	96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln	
20 25 30	
cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga	144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc cat tac ggc	192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly	
50 55 60	
aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag	240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa	288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac	336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt	384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca	432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro	
130 135 140	
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt	480

Ser	Thr	Glu	Lys	Met	Tyr	Val	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp	Val		
145					150					155					160		
aac	atg	gct	ctg	ttg	ctt	caa	gga	ggt	ggc	cat	tac	cga	tgt	gac	ttc	528	
Asn	Met	Ala	Leu	Leu	Leu	Gln	Gly	Gly	Gly	His	Tyr	Arg	Cys	Asp	Phe		
				165				170						175			
aga	act	act	tac	aaa	gca	aag	aag	ggt	gtc	cag	ttg	cca	gac	tat	cac	576	
Arg	Thr	Thr	Tyr	Lys	Ala	Lys	Lys	Val	Val	Gln	Leu	Pro	Asp	Tyr	His		
			180					185					190				
ttc	gtg	gat	cat	cga	att	gag	ata	aca	agc	cat	gac	aag	gat	tac	aac	624	
Phe	Val	Asp	His	Arg	Ile	Glu	Ile	Thr	Ser	His	Asp	Lys	Asp	Tyr	Asn		
		195				200						205					
aag	ggt	aag	ctg	tat	gag	cat	gct	aaa	gct	cat	tcc	ggg	ctg	cca	agg	672	
Lys	Val	Lys	Leu	Tyr	Glu	His	Ala	Lys	Ala	His	Ser	Gly	Leu	Pro	Arg		
	210					215					220						
ctg	gcc	aag	taa													684	
Leu	Ala	Lys															
225																	

<210> 14
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 <213> Favia favus

<400> 14

Met	Ser	Val	Ile	Thr	Ser	Glu	Met	Lys	Met	Glu	Leu	Arg	Met	Glu	Gly		
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Ala	Val	Asn	Gly	His	Lys	Phe	Val	Ile	Thr	Gly	Lys	Gly	Ser	Gly	Gln		
			20					25					30				
Pro	Phe	Glu	Gly	Ile	Gln	Asn	Val	Asp	Leu	Thr	Val	Ile	Glu	Gly	Gly		
		35					40					45					
Pro	Leu	Pro	Phe	Ala	Phe	Asp	Ile	Leu	Thr	Thr	Val	Phe	His	Tyr	Gly		
	50					55					60						
Asn	Arg	Val	Phe	Val	Lys	Tyr	Pro	Glu	Glu	Ile	Val	Asp	Tyr	Phe	Lys		
	65				70					75					80		
Gln	Ser	Phe	Pro	Glu	Gly	Tyr	Ser	Trp	Glu	Arg	Ser	Met	Ser	Tyr	Glu		
				85					90					95			
Asp	Gly	Gly	Ile	Cys	Leu	Ala	Thr	Asn	Asn	Ile	Thr	Met	Lys	Lys	Asp		
			100					105					110				
Gly	Ser	Asn	Cys	Phe	Val	Tyr	Glu	Ile	Arg	Phe	Asp	Gly	Val	Asn	Phe		
		115					120					125					
Pro	Ala	Asn	Gly	Pro	Val	Met	Gln	Arg	Lys	Thr	Val	Lys	Trp	Glu	Pro		
	130					135					140						
Ser	Thr	Glu	Lys	Met	Tyr	Val	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp	Val		
145					150					155					160		
Asn	Met	Ala	Leu	Leu	Leu	Gln	Gly	Gly	Gly	His	Tyr	Arg	Cys	Asp	Phe		

				165						170					175		
Arg	Thr	Thr	Tyr	Lys	Ala	Lys	Lys	Val	Val	Gln	Leu	Pro	Asp	Tyr	His		
			180					185					190				
Phe	Val	Asp	His	Arg	Met	Glu	Ile	Thr	Ser	His	Asp	Lys	Asp	Tyr	Asn		
		195					200					205					
Lys	Val	Lys	Leu	Tyr	Glu	His	Ala	Lys	Ala	His	Ser	Gly	Leu	Pro	Arg		
	210					215					220						
Leu	Ala	Lys															
225																	

<210> 15

<211> 684

<212> DNA

<213> Favia favius

<220>

<221> CDS

<222> (1)..(681)

<400> 15

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1				5					10					15		

gct	gta	aac	ggg	cac	aag	ttc	gtg	att	aca	ggg	aaa	gga	agt	ggc	cag	96
Ala	Val	Asn	Gly	His	Lys	Phe	Val	Ile	Thr	Gly	Lys	Gly	Ser	Gly	Gln	
			20				25						30			

cct	ttc	gag	gga	ata	cag	aat	gtg	gac	ctg	aca	gtc	ata	gag	ggc	gga	144
Pro	Phe	Glu	Gly	Ile	Gln	Asn	Val	Asp	Leu	Thr	Val	Ile	Glu	Gly	Gly	
		35					40					45				

cct	ctt	cct	ttt	gct	ttc	gat	atc	ctg	aca	aca	gta	ttc	cat	tac	ggc	192
Pro	Leu	Pro	Phe	Ala	Phe	Asp	Ile	Leu	Thr	Thr	Val	Phe	His	Tyr	Gly	
	50					55					60					

aac	cgg	gta	ttt	gtc	aaa	tac	cca	gaa	gaa	ata	gta	gac	tac	ttc	aag	240
Asn	Arg	Val	Phe	Val	Lys	Tyr	Pro	Glu	Glu	Ile	Val	Asp	Tyr	Phe	Lys	
65					70					75					80	

cag	tcg	ttt	cct	gag	ggt	tat	tct	tgg	gaa	cga	agc	atg	agt	tac	gaa	288
Gln	Ser	Phe	Pro	Glu	Gly	Tyr	Ser	Trp	Glu	Arg	Ser	Met	Ser	Tyr	Glu	
				85					90					95		

gac	ggg	gga	att	tgc	ctc	gcc	aca	aac	aat	ata	acg	atg	aag	aaa	gac	336
Asp	Gly	Gly	Ile	Cys	Leu	Ala	Thr	Asn	Asn	Ile	Thr	Met	Lys	Lys	Asp	
			100					105					110			

ggc	agc	aac	tgt	ttt	gtc	tat	gaa	att	cga	ttt	gat	ggt	gtg	aac	ttt	384
Gly	Ser	Asn	Cys	Phe	Val	Tyr	Glu	Ile	Arg	Phe	Asp	Gly	Val	Asn	Phe	
		115					120					125				

cct	gcc	aat	ggt	cca	gtt	atg	cag	agg	aag	acc	gtc	aaa	tgg	gag	cca	432
Pro	Ala	Asn	Gly	Pro	Val	Met	Gln	Arg	Lys	Thr	Val	Lys	Trp	Glu	Pro	
	130					135					140					

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt	480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val	
145 150 155 160	

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc	528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe	
165 170 175	

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac	576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His	
180 185 190	

ttc gtg gat cat cga atg gag ata aca agc cat gac aag gat tac aac	624
Phe Val Asp His Arg Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn	
195 200 205	

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg	672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg	
210 215 220	

ctg gcc aag taa	684
Leu Ala Lys	
225	

<210> 16
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 <212> PRT
 <213> Favia favirus

<400> 16	
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20 25 30	
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly	
50 55 60	
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser	
130 135 140	
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val	
145 150 155 160	

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190
 Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220
 Leu Ala Lys
 225

<210> 17
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 <212> DNA
 <213> Favia favius

<220>
 <221> CDS
 <222> (1)..(681)

<400> 17
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 Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
 20 25 30
 cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga 144
 Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
 35 40 45
 cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc 192
 Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
 50 55 60
 aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
 Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65 70 75 80
 cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
 Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
 85 90 95
 gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
 Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
 100 105 110
 ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt 384
 Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
 115 120 125
 cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag tca 432
 Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser
 130 135 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt	480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val	
145 150 155 160	
aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc	528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe	
165 170 175	
aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac	576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His	
180 185 190	
ttc gtg gat cat cta atg gag ata aca agc cat gac aag gat tac aac	624
Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn	
195 200 205	
aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg	672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg	
210 215 220	
ctg gcc aag taa	684
Leu Ala Lys	
225	

<210> 18

<211> 227

<212> PRT

<213> Favia favus

<400> 18

Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly	
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Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln	
20 25 30	
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly	
50 55 60	
Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro	
130 135 140	
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val	
145 150 155 160	

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
180 185 190

Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
195 200 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
210 215 220

Leu Ala Lys
225

<210> 19
<211> 684
<212> DNA
<213> Favia favius

<220>
<221> CDS
<222> (1)..(681)

<400> 19

atg agt gtg att aca tca gaa atg aag atc gag ctg cgt atg gaa ggc	48
Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly	
1 5 10 15	
gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag	96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln	
20 25 30	
cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga	144
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc	192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly	
50 55 60	
aac cgg gta ttt gtc gaa tac cca gaa gaa ata gta gac tac ttc aag	240
Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa	288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac	336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt	384
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca	432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro	

130	135	140	
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gta			480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val			
145	150	155	160
aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc			528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe			
	165	170	175
aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac			576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His			
	180	185	190
ttc gtg gat cat caa atg gag ata aca agc cat gac aag gat tac aac			624
Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn			
	195	200	205
aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg			672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg			
	210	215	220
ctg gcc aag taa			684
Leu Ala Lys			
225			

<210> 20

<211> 227

<212> PRT

<213> Favia favus

<400> 20

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly	
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Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln	
20 25 30	
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly	
50 55 60	
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro	
130 135 140	
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val	

145		150		155		160
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe						
		165		170		175
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His						
		180		185		190
Phe Val Asp Leu Arg Thr Glu Ile Thr Ser His Asp Lys Asp Tyr Asn						
		195		200		205
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg						
		210		215		220
Leu Ala Lys						
225						

<210> 21
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 <212> DNA
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<220>
 <221> CDS
 <222> (1)..(681)

<400> 21	
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1 5 10 15	
gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag	96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln	
20 25 30	
cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga	144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly	
35 40 45	
cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc ggt cac ggc	192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly	
50 55 60	
aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag	240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys	
65 70 75 80	
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa	288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu	
85 90 95	
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac	336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp	
100 105 110	
ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt	384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe	
115 120 125	
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca	432

Pro	Ala	Asn	Gly	Pro	Val	Met	Gln	Arg	Lys	Thr	Val	Lys	Trp	Glu	Pro	
	130					135					140					
tcc	act	gag	aaa	atg	tat	gtg	cgt	gat	gga	gtg	ctg	aag	ggt	gat	gtt	480
Ser	Thr	Glu	Lys	Met	Tyr	Val	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp	Val	
145					150					155					160	
aac	atg	gct	ctg	ttg	ctt	caa	gga	ggt	ggc	cat	tac	cga	tgt	gac	ttc	528
Asn	Met	Ala	Leu	Leu	Leu	Gln	Gly	Gly	Gly	His	Tyr	Arg	Cys	Asp	Phe	
				165					170					175		
aga	act	act	tac	aaa	gca	aag	aag	gtt	gtc	cag	ttg	cca	gac	tat	cac	576
Arg	Thr	Thr	Tyr	Lys	Ala	Lys	Lys	Val	Val	Gln	Leu	Pro	Asp	Tyr	His	
			180					185					190			
ttc	gtg	gat	ctt	cga	act	gag	ata	aca	agc	cat	gac	aag	gat	tac	aac	624
Phe	Val	Asp	Leu	Arg	Thr	Glu	Ile	Thr	Ser	His	Asp	Lys	Asp	Tyr	Asn	
		195					200					205				
aag	gtt	aag	ctg	tat	gag	cat	gct	aaa	gct	cat	tcc	ggg	ctg	cca	agg	672
Lys	Val	Lys	Leu	Tyr	Glu	His	Ala	Lys	Ala	His	Ser	Gly	Leu	Pro	Arg	
	210					215					220					
ctg	gcc	aag	taa													684
Leu	Ala	Lys														
225																

<210> 22
 <211> 225
 <212> PRT
 <213> Discosoma sp.

<400> 22

Met	Arg	Ser	Ser	Lys	Asn	Val	Ile	Lys	Glu	Phe	Met	Arg	Phe	Lys	Val	
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Arg	Met	Glu	Gly	Thr	Val	Asn	Gly	His	Glu	Phe	Glu	Ile	Glu	Gly	Glu	
			20					25					30			
Gly	Glu	Gly	Arg	Pro	Tyr	Glu	Gly	His	Asn	Thr	Val	Lys	Leu	Lys	Val	
		35					40					45				
Thr	Lys	Gly	Gly	Pro	Leu	Pro	Phe	Ala	Trp	Asp	Ile	Leu	Ser	Pro	Gln	
	50					55					60					
Phe	Gln	Tyr	Gly	Ser	Lys	Val	Tyr	Val	Lys	His	Pro	Ala	Asp	Ile	Pro	
65					70					75					80	
Asp	Tyr	Lys	Lys	Leu	Ser	Phe	Pro	Glu	Gly	Phe	Lys	Trp	Glu	Arg	Val	
				85					90					95		
Met	Asn	Phe	Glu	Asp	Gly	Gly	Val	Val	Thr	Val	Thr	Gln	Asp	Ser	Ser	
			100					105					110			
Leu	Gln	Asp	Gly	Cys	Phe	Ile	Tyr	Lys	Val	Lys	Phe	Ile	Gly	Val	Asn	
		115					120					125				
Phe	Pro	Ser	Asp	Gly	Pro	Val	Met	Gln	Lys	Lys	Thr	Met	Gly	Trp	Glu	
	130					135						140				

Ala Ser Thr Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Glu
 145 150 155 160
 Ile His Lys Ala Leu Lys Leu Lys Asp Gly Gly His Tyr Leu Val Glu
 165 170 175
 Phe Lys Ser Ile Tyr Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr
 180 185 190
 Tyr Tyr Val Asp Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr
 195 200 205
 Thr Ile Val Glu Gln Tyr Glu Arg Thr Glu Gly Arg His His Leu Phe
 210 215 220
 Leu
 225

<210> 23
 <211> 225
 <212> PRT
 <213> Trachyphyllia geoffroyi

<400> 23

Met Ser Leu Ile Lys Pro Glu Met Lys Ile Lys Leu Leu Met Glu Gly
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 Asn Val Asn Gly His Gln Phe Val Ile Glu Gly Asp Gly Lys Gly His
 20 25 30
 Pro Phe Glu Gly Lys Gln Ser Met Asp Leu Val Val Lys Glu Gly Ala
 35 40 45
 Pro Leu Pro Phe Ala Tyr Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
 50 55 60
 Asn Arg Val Phe Ala Lys Tyr Pro Asp His Ile Pro Asp Tyr Phe Lys
 65 70 75 80
 Gln Ser Phe Pro Lys Gly Phe Ser Trp Glu Arg Ser Leu Met Phe Glu
 85 90 95
 Asp Gly Gly Val Cys Ile Ala Thr Asn Asp Ile Thr Leu Lys Gly Asp
 100 105 110
 Thr Phe Phe Asn Lys Val Arg Phe Asp Gly Val Asn Phe Pro Pro Asn
 115 120 125
 Gly Pro Val Met Gln Lys Lys Thr Leu Lys Trp Glu Ala Ser Thr Glu
 130 135 140
 Lys Met Tyr Leu Arg Asp Gly Val Leu Thr Gly Asp Ile Thr Met Ala
 145 150 155 160
 Leu Leu Leu Lys Gly Asp Val His Tyr Arg Cys Asp Phe Arg Thr Thr
 165 170 175
 Tyr Lys Ser Arg Gln Glu Gly Val Lys Leu Pro Gly Tyr His Phe Val
 180 185 190

Asp His Cys Ile Ser Ile Leu Arg His Asp Lys Asp Tyr Asn Glu Val
195 200 205

Lys Leu Tyr Glu His Ala Val Ala His Ser Gly Leu Pro Asp Asn Val
210 215 220

Lys
225